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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,831	11/30/2000	Neal A. Osborn	35451/102	1494
26371	7590	01/31/2006		
FOLEY & LARDNER LLP 777 EAST WISCONSIN AVENUE SUITE 3800 MILWAUKEE, WI 53202-5308			EXAMINER TUNG, KEE M	
			ART UNIT	PAPER NUMBER
			2671	
DATE MAILED: 01/31/2006				

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/726,831
Filing Date: November 30, 2000
Appellant(s): OSBORN ET AL.

Chad E. Bement
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/5/05 appealing from the Office action mailed 7/1/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,915,265	Crocker et al	06-1999
5,793,385	Nale	8-1998

5,712,664

Reddy

01-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-13 and 15-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crocker et al (5,915,265 hereinafter "Crocker") in view of Nale (5,793,385) and Reddy (5,712,664).

Crocker teaches a computing device (Figs. 1 and 2) comprising a communication bus (either CPU bus 2 or I/O bus 8); a display (7) configured to display in more than one display mode and coupled to the communications bus; a processor (1) coupled to the display and to the communications bus; a display controller (5) coupled to the communications bus; an external RAM (6) is being control by the graphics processor (5); and a main memory (4) coupled to the communications bus, the RAM being controlled by display logic (such function is performed by MC 20, MA 26, or CR1-CR3 (22-24)), the display logic being configured to manage the memory and allocate the memory according to the display mode (based on the display resolution and color in unified memory architecture, col. 2, lines 65-67) and the display logic is configured to change

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the display mode during operation of an application running on the computing device according to changing graphical need of the application, the display modes including at least one of resolution modes and color modes (col. 2, lines 65-67). It is noted that Crocker fails to explicitly suggest or teach "changing of display mode and allocating more memory without reboot the system (during the operation of application)". This is what Nale teaches (col. 1, lines 41-49 and col. 3, lines 13-29). Nale further teaches a UMA system (Fig. 1) comprising a CPU (2); a system logic (4); a graphics controller (6); a display monitor (8); a unified system memory (10); and an address translation (12). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of Nale into the system of Crocker because Nale is specifically designed to overcome the prior art problem, such as, to reboot the system to dedicate more memory to the graphics controller of Crocker (see, col. 1, lines 20-38). However, the combined system fails to explicitly teach or suggest the memory includes an internal RAM and an external RAM for allocating between the two. This is what Reddy teaches (Fig. 2). Reddy teaches an integrated graphics display memory element includes both a graphics accelerator (110) and an on chip frame buffer (112) and an off chip frame buffer (114). The graphics accelerator distributes and/or controls both the internal and external RAMs. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of internal and external RAMs of Reddy into the combined system of Crocker and Nale in order to increase the performance of the graphics display system because display data retrieval from on-chip frame buffer is much faster than

from external frame buffer and also reduce the on-chip power dissipation that is especially critical in handheld, portable, possibly wireless, products where battery life is a primary and essential operational issue; and thus achieving system performance. The integrated solution also **allows the display memory size to be expanded** by adding external memory so that large displays can be accommodated on an as-needed basis as taught by Reddy (col. 2, lines 30-41 and col. 4, lines 1-20). Therefore, at least claims 1-4 and 15-30 would have been obvious.

As per claims 5-13, Crocker teaches the display mode is dependent on the resolution (could be any resolution) and number of colors (any number of colors) desired (see col. 2, lines 65-67).

(10) Response to Argument

First at all, Appellants argue that the combination of Crocker et al, Nale, and Reddy does not teach or suggest at least one element of each of claims 1-13 and 15-30. In particular, Reddy fails to teach or suggest to manage or allocate internal and external RAM according to color or resolution display modes. The examiner disagrees. First, both Crocker and Nale teaches to manage or allocate memory size according to color or resolution display modes (Crocker, col. 2, lines 65-67; and Nale, col. 1, lines 41-49 and col. 3, lines 13-29). Second, Reddy at least teaches to manage or allocate the memory size based on display size, for example, Fig. 4 shows only need an internal RAM for small display size (col. 3, lines 1-5, 23-27 and col. 5, lines 24-33). Furthermore, Appellants cannot show non-obviousness by attacking references

individually where, as here the rejection is based on combination of references. In re Keller, 208 USPQ 871 (CCPA 1981).

Secondly, Appellant argues that there is no suggestion to combine the teachings of Crocker et al, Nale, and Reddy and there must show some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. In particular, Appellants argue that it is unclear how the Examiner's statement provides a motivation to combine the teachings of Reddy into the combined system of Crocker and Nale. The examiner's statement merely suggests that advantages described in Reddy. Well, it is well known that the advantages provide from the combination of prior art is considered one of the reasons and motivations to combine the prior art. For example, all three prior art of Crocker, Nale, and Reddy teaches the advantages of their individual invention over the prior art system. Furthermore, Reddy teaches various alternatives to the embodiment of the invention, for example, for small display size, you only need a single internal memory (Fig. 4) and for larger display size or other reasons requires large memory, you can have combination of an internal and external memories all based on the prior art Fig. 1 where there is only a single external memory to the graphics controller. Similar prior art figures also show in figure one of Crocker with an external memory 6 to the graphics controller 5 and Nale also teaches "memory space is typically provided by two separate memories: a system memory for use by the CPU and a memory for use by the graphics controller" (col. 1, lines 16-19).

Then, Appellants argue that the examiner has engaged in hindsight reasoning to combine such teachings. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, all three references, Crocker, Nale and Reddy teaches or suggests, it is a conventional or at least known system that a separate external memory can be coupled to the graphics controller. Therefore, to modify the shared memory architecture of Crocker and Nale as Reddy is considered within the level of ordinary skill in the art because the system is considered as a conventional system.

Appellants further argue "Crocker teaches away from the teachings of Reddy". The examiner disagrees because Crocker also teaches or suggests, it is well known in the art a separate frame buffer can be coupled to the graphics controller (Fig. 1) and Reddy also teaches based on the prior art fig. 1, you can be obtained the claimed internal and external memory based on at least from different display size (Figs. 2 and 4; col. 3, lines 1-5, 23-27 and col. 5, lines 24-33).

Appellants further argue that the proposed combination of teachings of Reddy with those of Crocker would also change the principle of operation of Crocker by avoiding the added cost of additional dedicated memory. Well, it is true that additional

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memory adds additional cost. However, that further proves a point of obviousness to one of ordinary skill in the art because as long as the cost is not an issue, one of ordinary skill in the art would know how to modify from one system (shared memory to save cost) to another (separate memories if cost is not a factor and normally proves better performance with dedicated graphics memory, such as, prior art fig. 1).

Finally, Appellants argue that the proposed motivations for combining the teachings of Reddy with those of Crocker and Nale (i.e., speed and power savings) would not motivate one of ordinary skill in the art to use an off-chip/on-chip structure of Reddy. Rather, one of ordinary skill in the art would be motivated one to simply use an entirely on-chip structure to obtain speed and power savings. Well, **only** if that person wants to obtain **speed and power savings**. In Reddy's case, Reddy also want to allow simultaneous access to both on-chip and off-chip DRAM while maintaining the flexibility to increase the display memory size externally to meet a variety of display size requirement (col. 3, lines 1-5).

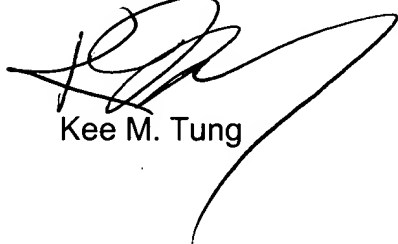
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,

A handwritten signature in black ink, appearing to be 'K. M. Tung', written over the printed name.

Kee M. Tung

Conferees:

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